

Abstract:

Careful attention to detail and adherence to procedure guidelines when inserting and managing intravascular catheters has decreased the incidence of catheter-related bloodstream infections (CRBSIs). In order to limit these, health professionals must understand the underlying microbiology. Biofilms can explain the clinical findings most often seen with CRBSIs, yet they are poorly understood within medicine. Bacteria growing on solid surfaces such as a catheter are predominantly in biofilm phenotype, with a group of genes active that allow the bacteria to be tolerant to antiseptics and antibiotics by producing a self-secreted protective matrix. It is unclear whether it is planktonic seeding or small fragments of biofilm breaking off into the bloodstream that eventually results in the acute infection. The literature identifies four routes for microbes to adhere to a catheter and start biofilm formation: catheter contact, catheter insertion, catheter management and non-catheter-related sources. Routine clinical culture methods are inadequate to fully identify microbes producing catheter biofilm and/or bloodstream infection, therefore DNA methods may be required to diagnose CRBSIs. Treatment is removal and reinsertion of the catheter in a different site when possible. However, antibiofilm strategies can be employed to try to salvage the catheter. The use of high-dose antiseptics or antibiotics for long durations inside the catheter and hub (antibiotic/antiseptic lock) can suppress biofilm enough to reduce the seeding of the blood below a level where the patient's immune system can prevent bloodstream infection.

Reference:

Wolcott R. Biofilm and catheter-related bloodstream infections. *Br J Nurs*. 2021 Apr 22;30(8):S4-S9. doi: 10.12968/bjon.2021.30.8.S4. PMID: 33876689.